



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/GB93/00573 <b>(22) International Filing Date:</b> 19 March 1993 (19.03.93)  <b>(30) Priority data:</b> 9205988.0 19 March 1992 (19.03.92) GB  <b>(71) Applicant (for all designated States except US):</b> SMART-SHAVE LIMITED [GB/GB]; 4 Fiona Close, Easton Lane, Winchester, Hampshire SO23 8HB (GB).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only) :</b> DUNBAR, Peter [GB/GB]; 31 St. Catherines Road, Southbourne, Bourne-mouth, Dorset BH6 4AE (GB). FENECH, Ronald [GB/GB]; 4 Fiona Close, Easton Lane, Winchester, Hampshire SO23 8HB (GB).		<b>(74) Agent:</b> MERCER, Christopher, Paul; Carpmaels & Ransford, 43 Bloomsbury Square, London WC1A 2RA (GB)  <b>(81) Designated States:</b> AT, AU, BB, BG, BR, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, US, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAP patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> SHAVING GELS  <b>(57) Abstract</b>  Water-based non-foaming shaving gels are disclosed comprising from 0.05 to 4.0 % of a carboxypolymethylene, from 2.00 to 52.0 % of a polyhydric alcohol and optionally also containing a silicone derivative, an antipruritic agent, preservative agents, a chelating agent, a neutralising agent, a solubilising agent, a UV light absorbing agent or a perfume. The preferred polyhydric alcohol is glycerin. The gel is applied directly to dry skin and hair prior to shaving with a razor blade and provides a close, comfortable and well lubricated shave.		

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SHAVING GELS

The present invention relates to a water-based non-foaming shaving gel.

5        Essentially two methods are used by men and women to shave facial hair and other unwanted body hair. The first method is dry shaving with an electric razor. The second method is so-called "wet" shaving with a razor blade, such as with a cut-throat razor or a safety razor. The main  
10 advantages of shaving with an electric razor are convenience and safety. An electric razor can be operated wherever there is a supply of electric current, and a battery-operated electric razor can be operated anywhere. Furthermore, an electric razor can be used safely and  
15 comfortably in moving vehicles such as aeroplanes, etc. The skin and hair or bristles to be shaved do not need any preparation such as by moistening or soaping prior to shaving with an electric razor. It follows that dry shaving does not require a supply of soap, water or towels. For  
20 these reasons dry shaving with an electric razor is the shaving method of choice for many frequent travellers.

However, there are drawbacks to dry shaving with an electric razor. Chief among these is the fact that electric razors do not give such a close shave as wet shaving with a  
25 blade. Moreover, it can be difficult to shave all requisite parts of the skin because of the bulk and shape of the electric razor surface. Finally, an electric razor requires a substantially larger capital outlay than a razor blade and requires a supply either of electric current or of  
30 batteries.

Wet shaving with a razor blade provides the advantages of a very close shave at low cost. Furthermore, manipulation of the razor blade enables any desired region of the skin to be shaved without difficulty. The chief  
35 drawback of shaving with a razor blade is that it is necessary to moisten and preferably also soften and

lubricate the skin and hair to be shaved. In Roman times this was done by applying olive oil to the skin and hair. More recently the practice developed of applying a soap-and-water lather to the area to be shaved, and various soaps  
5 were developed especially for the purpose. However, these lathering soaps are somewhat time-consuming and inconvenient to apply, and the residue of the soap must be washed off the face after shaving. The resulting requirement for water and towels made use of these lathers inconvenient, especially  
10 for travellers.

As an alternative to the soap-and-water lather there are currently on the market various brushless shaving creams. These are typically modified vanishing creams which are smeared directly onto the face without mixing with water  
15 and without lathering. The brushless shaving creams provide a measure of convenience compared to soap-and-water lathers. However, the brushless shaving creams are oil-based and tend to leave a greasy or sticky residue on the skin which is uncomfortable unless washed off after shaving. It follows  
20 that the provision of soap, water and towels is also required for satisfactory shaving using brushless shaving creams.

Another popular way to moisten, soften and lubricate skin and hair prior to shaving with a razor blade is by  
25 means of an aerosol shaving foam. These foams are dispensed directly from pressurised containers and consequently are quick and convenient to use. However, the foams suffer from the same drawback as the soap-and-water lather and brushless creams described above, in that the foams leave behind an  
30 oily and/or soapy residue on the skin after shaving. Comfort and hygiene require that this residue be washed off after shaving, which necessitates the use of soap, water and towels. Another drawback of the aerosol shaving foams is improper wetting by the foam of the skin surface and the  
35 bristles to be-shaved, especially if the bristles are long. This is a consequence both of the physical properties of the foam and of the slowness of liquid transport through the foam. The aerosol shaving canisters tend to be rather bulky

and inconvenient for use when travelling, and cannot be taken on aircraft unless the aircraft baggage hold is pressurised. A further drawback of aerosol shaving foams is that the chlorofluorocarbon (CFC) or hydrocarbon propellant and/or foaming agent is known to be environmentally harmful.

GB-A-1279145 (S.C. Johnson & Son, Inc.) discloses post-foaming gel compositions, including compositions for application to the skin prior to shaving with a razor blade. The compositions comprise at least one post-foaming agent, which is the name given to specified chemically inert agents having a vapour pressure in the range 0.71 to 1.5 MPa (6 to 14 psig) at a temperature of 32°C to 38°C (90°-100°F). The gels are stored in aerosol-type pressurised containers. The vapour pressure of the post-foaming agent is chosen such that when the gel is dispensed from the container under static ambient conditions, the gel remains substantially free from foaming for at least 60 seconds, but when the gel is rubbed either between the fingers or on the skin, a lather is produced by volatilisation of the post-foaming agent. This behaviour of the post-foaming gel compositions results in improved wetting of the skin and hair to be shaved. However, the compositions disclosed in GB-A-1279145 also contain soap and frequently also oil. As a result, these compositions will leave an oily or sticky residue on the skin after shaving which must be washed off with the aid of soap, water and towels. These compositions therefore fail to solve a major problem of wet shaving with a razor blade. Furthermore, the post-foaming gel compositions are provided in bulky, pressurised canisters and the propellants and post-foaming agents cause environmental damage in the same way as those used in more conventional aerosol shaving foams.

GB-B-2167429 (Alan John Robertson) discloses water-based non-foaming shaving gels intended to be especially suitable for use by people on journeys. The gels comprise:-

- 0.05 to 2% of a carboxypolymethylene;
- 5 to 50% of a lower alkanol;
- up to 3% of an antipruritic agent;

- up to 0.5% of a preservative agent;
- up to 0.5% of a chelating agent;
- up to 0.5% of a neutralising agent;
- up to 10% of a solubiliser; and
- 5 up to 5% of a perfume, the remainder of the gel comprising water.

The carboxypolymethylene functions as the gelling agent.

- The lower alkanols are volatile monohydric alcohols,
- 10 preferably ethanol, but may also be isopropanol, n-butanol or an amyl alcohol. The advantage of the claimed compositions is chiefly due to the absence of soap or oil from the compositions. As a result, the claimed gels leave no greasy or sticky residue on the skin after shaving so
- 15 that the skin does not need to be washed after shaving. It follows that the claimed shaving gels could be used for shaving with a razor blade without any associated need for soap, water or towels.

- The chief drawback of the above gel compositions is
- 20 that when applied directly to dry skin and hair they do not sufficiently soften and lubricate the skin and hair to be shaved so as to provide a really close and comfortable shave. Furthermore, the use of a lower alkanol/water base for the shaving gel can result in some desiccation and/or
- 25 irritation of the skin.

- It is an object of the present invention to provide shaving gels for use in shaving with a razor blade. These gels, when applied directly to dry skin and hair, will provide a close and comfortable shave without leaving an
- 30 oily or sticky residue on the skin after shaving, and will not desiccate or irritate the skin.

According to the present invention, there is provided a non-foaming shaving gel comprising:

- 0.05 to 4.0% of a carboxypolymethylene;
- 35 2.0 to 52.0% of a polyhydric alcohol;
- up to 5% of a silicone derivative;
- up to 4% of an antipruritic agent;
- up to 1% of one or more preservative agents;

up to 1% of a chelating agent;  
up to 8% of a neutralising agent;  
up to 10% of a solubilising agent;  
up to 0.4% of a UV light absorbing agent; and  
5 up to 7% of a perfume,  
the remainder of the gel comprising water.

In this specification, all parts and percentages are by weight unless otherwise stated. The identities of all the materials used are designated according to the CTFA  
10 Cosmetic Ingredient Dictionary, third edition, published by the Cosmetic, Toiletry and Fragrance Association, Inc. of 1110 Vermont Avenue, N.W., Washington, D.C.

The carboxypolymethylene in the compositions according to the present invention functions primarily as a gelling  
15 agent. The carboxypolymethylene may be any of those vinyl polymers with active carboxyl groups known in the cosmetic art. Preferred polymers are the polymers of acrylic acid cross-linked with a functional agent, which are designated "carbomers" in the CTFA Cosmetic Ingredient Dictionary. A  
20 particularly preferred such polymer is sold under the Registered Trade Mark CARBOPOL 940 by the B.F. Goodrich Chemical Company. The amount of carbomer used will depend on various factors including the final packaging form, but will preferably be in the range of 0.25% to 1.5% by weight.

25 The polyhydric alcohol is included in the composition because it has a softening and emollient effect on the hair and skin to be shaved. Furthermore, polyhydric alcohols are good lubricants and thereby improve the closeness and comfort of the shave. Finally, any residue of the  
30 polyhydric alcohol left after shaving is absorbed by the epidermis, where it has an emollient and rehydrative effect. The preferred polyhydric alcohol for the compositions of the present invention is glycerin, and the preferred weight concentration is from 10% to 20% of the composition.

35 A silicone derivative is optionally included in the compositions according to the present invention in order further to lubricate the skin and hair to be shaved. Of the silicone lubricants suitable for cosmetic use, a preferred

product is a polymer of dimethylsiloxane with poly xyethylene and/or polyoxypropylene side chains. This is referred to as Dimethicone Copolyol in the CTFA Cosmetic Ingredient Dictionary.

5 An antipruritic agent is also optionally added to the non-foaming gels according to the present invention in order to minimise irritation and itching of the skin after shaving. Any of the known antipruritic agents may be used. The preferred antipruritic is menthol, which is inexpensive  
10 and provides a pleasant odour as well as a pleasant sensation of coolness on exposed skin. The preferred weight concentration of the antipruritic agent is from 1 to 2%.

The non-foaming gel according to the present invention may also comprise one or more preservative agents, since the  
15 water-based gel might otherwise support microbiological growth. Any preservative agent suitable for cosmetic use may be employed. A preferred preservative agent is the methyl ester of p-hydroxy-benzoic acid, commonly known as Methylparaben, at a preferred concentration by weight of  
20 from 0.05% to 0.20% of the composition.

Carbomer gels are susceptible to breakdown caused by the presence of dissolved metal ions. It is thus desirable to include in those non-foaming gels of the present invention that contain a carbomer a suitable chelating agent  
25 to sequester dissolved metal ions and thereby prevent decomposition of the carbomer. The preferred chelating agent is disodium ethylene diamine tetra-acetate (disodium EDTA), and the preferred weight concentration range for the chelating agent is from 0.25% to 1.00%.

30 In order to form a stable carbomer gel the active carboxylic acid groups have to be neutralised. The nature of the neutralising agent and the pH of the composition have a marked effect on the characteristics of the finished product, especially the viscosity. Various neutralising  
35 agents have been found to be suitable, but alkanolamines are the preferred neutralising agents. Especially preferred neutralising agents are monoisopropylamine and triethanolamine. Preferably, enough of the neutralising



agent is added to raise the pH of the composition to a pH in the range of 5.5 to 7.5, the final choice of neutralising agent and pH being dependent on local requirements and the chosen pack form.

- 5       The non-foaming shaving gels according to the present invention may optionally contain perfume to suit the taste of the public. It is also envisaged that the gels may contain a colouring agent.

10       If it is decided to add a perfume to a non-foaming shaving gel according to the present invention, then it is preferred that a solubilising agent is added to dissolve the aromatic oils of the perfume in the water-based matrix of the gel. The preferred solubilising agent for this purpose is the one listed as PEG-60 Hydrogenated Castor Oil in the  
15   CTFA Cosmetic Ingredients Dictionary. The solubilising agent also assists wetting of the skin and hair to be shaved.

      If the non-foaming shaving gels according to the present invention are intended to be packaged in a container  
20   such that the product is exposed to sunlight, then inclusion of a UV-light absorber in the composition is recommended. Preferred UV-light absorbers well known in the cosmetics art are Benzophenone-3 or Benzophenone-4.

      The non-foaming shaving gels according to the present  
25   invention can be packaged in jars, tubes, roll-on canisters or sachets. It is envisaged that a preferred method of packaging the gels according to the present invention will be in 50 to 100ml roll-on canisters or in 5 to 10ml sachets made of aluminium-backed paper or plastic for the particular  
30   convenience of people on journeys, or for use where conventional shaving facilities are not available. A container of the shaving gel may be associated with a napkin and a razor in a disposable use-anywhere shaving pack.

      The shaving gels made according to the present  
35   invention are employed by smearing them directly onto the area of skin to be shaved. There is no need to pre-wet the skin. The shaving gel softens, moistens and lubricates the skin and hair and provides a close, comfortable and well lubricated shave. Because the shaving gel is not oil based

and contains essentially no soap, it does not leave an oily or sticky residue on the skin after shaving. Therefore, there is no need to wash the skin after shaving and no consequent need for soap, water or towels. The residue of polyhydric alcohol left on the skin after shaving is absorbed by the epidermis and has the effect of soothing and moisturising the skin, thereby automatically counteracting the normal irritant and desiccant effect of shaving.

10       The non-foaming shaving gels according to the present invention may also be used as a pre-electric facial lubricant for use prior to shaving with an electric razor, thereby providing a closer and more comfortable "dry" shave.

15       The non-foaming shaving gels according to the present invention do not contain chlorofluorocarbons or hydrocarbon propellants or foaming agents, and consequently are more environmentally acceptable than shaving foams. Furthermore, the non-foaming shaving gels according to the present invention do not contain any substantial amount of volatile lower alkanols. As a result the manufacture and storage of the gels is simplified and involves minimal fire risk.

20       Some embodiments of the present invention are described below, by way of example only.

#### Example 1

25       A clear gel was prepared by mixing thoroughly 823ml of water, 150g of glycerin, 20g of triethanolamine, 5g of Carbopol 940, 1g of methylparaben and 1g of disodium EDTA. The gel was allowed to stand for 2 hours at ambient temperature, after which 5g of the gel was applied to the face of a male subject showing 48 hours of beard growth. A satisfactory shave was obtained. The face could be wiped clean leaving no oily or sticky residue.

#### Example 2

35       A clear gel was prepared as above containing 813ml of water, 150g of glycerin, 20g of triethanolamine, 10g of dimethicone copolyol, 5g of Carbopol 940, 1g of methylparaben and 1g of disodium EDTA. After standing, the gel was tested as above. The shave was felt to be smoother and

better lubricated than shaving with the gel of Example 1.

Example 3

A clear gel was prepared as above containing 793ml of water, 150g of glycerin, 20g of triethanolamine, 20g of menthol, 10g of dimethicone copolyol, 5g of Carbopol 940, 1g of methylparaben and 1g of disodium EDTA. The gel was tested as before and was found to provide a more comfortable shave than in Examples 1 and 2.

Example 4

The gels made in Examples 1 to 3 were stored in closed containers for three months, following which the tests were repeated. No deterioration in the appearance or performance of the gels was apparent.

Example 5

A 5ml sample of each of the gels made according to Examples 1 to 3 was placed into a plastic sachet which was then heat sealed, to form a sealed sachet containing a quantity of the gel sufficient for one shave.

The above examples are intended by way of illustration only. Many other compositions falling within the scope of the present invention will be apparent to the skilled reader.

CLAIMS:

1. A non-foaming shaving gel comprising:
  - 0.05 to 4.0% of a carboxypolymethylene;
  - 2.00 to 52.0% of a polyhydric alcohol;
  - 5 up to 5% of a silicone derivative;
  - up to 4% of an antipruritic agent;
  - up to 1% of one or more preservative agents;
  - up to 1% of a chelating agent;
  - up to 8% of a neutralising agent;
  - 10 up to 10% of a solubilising agent;
  - up to 0.4% of a UV light absorbing agent; and
  - up to 7% of a perfume,

the remainder of the gel comprising water.
2. A shaving gel according to claim 1 wherein the  
15 carboxypolymethylene is a carbomer.
3. A shaving gel according to claim 2 wherein the carbomer is present in an amount of from 0.25% to 1.0%.
4. A shaving gel according to any preceding claim wherein the polyhydric alcohol comprises glycerin.
- 20 5. A shaving gel according to any preceding claim wherein the polyhydric alcohol is present in an amount of from 10% to 20%.
6. A shaving gel according to any preceding claim including, as a silicone derivative, a polymer of  
25 dimethylsiloxane with polyoxyethylene and/or polyoxypropylene side chains.
7. A shaving gel according to claim 6 wherein the silicone derivative is Dimethicone Copolyol present in an amount of from 0.5% to 2%.
- 30 8. A shaving gel according to any preceding claim including, as an antipruritic agent, menthol.
9. A shaving gel according to any preceding claim wherein the antipruritic agent is present in an amount of from 1% to 2%.
- 35 10. A shaving gel according to any preceding claim including, as preservative agent, the methylester of p-hydroxybenzoic acid in an amount of from 0.05% to 0.20% of the composition.

11. A shaving gel according to any preceding claim including, as chelating agent, disodium EDTA present in an amount of at least 0.05%.
12. A shaving gel according to any preceding claim  
5 including, as solubilising agent, Hydrogenated Castor Oil.
13. A shaving gel according to any preceding claim including, as neutralising agent, an alkylolamine.
14. A shaving gel according to any preceding claim including, as neutralising agent, monoisopropylamine or  
10 triethanolamine.
15. A shaving gel according to any preceding claim wherein the neutralising agent is present in an amount of from 0.10% to 5%.
16. A shaving gel according to any preceding claim  
15 including, as UV-light stabiliser, Benzophenone-3 or Benzophenone-4.
17. A shaving package comprising a container of a shaving gel according to any preceding claim.
18. A shaving package according to claim 17 wherein the  
20 container is a sachet or a roll-on canister.
19. A shaving package according to claim 17 or 18 further comprising a disposable bladed razor.
20. A shaving package according to claim 17, 18 or 19 further comprising a disposable towel.
- 25 21. A shaving gel substantially as hereinbefore described in any one of Examples 1 to 3.

**I. CLASSIFICATION OF SUBJECT MATTER** (if several classification symbols are indicated all)<sup>6</sup>

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 A61K7/15

**II. FIELDS SEARCHED**Minimum Documentation Searched<sup>7</sup>

Classification System

Classification Symbols

Int.Cl. 5

A61K

Documentation Searched other than Minimum Documentation  
to the Extent that such Documents are Included in the Fields Searched<sup>8</sup>**III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup>**

Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	GB,A,2 167 429 (ROBERTSON) 29 May 1986 cited in the application	17-20
Y	see claims 15-24	1-20
Y	see the whole document ---	
Y	US,A,3 314 857 (FAINER) 18 April 1967 see column 1, line 49 - column 2, line 64; claims 1-4; examples 1-2 ---	1-20
X	DE,B,1 142 429 (KAUFMANN) 17 January 1963 see example 4 ---	1-2, 12-13
X	GB,A,2 236 760 (INVERNESS CORPORATION) 17 April 1991 ---	1-4, 11, 13-15
	-/---	

<sup>9</sup> Special categories of cited documents: <sup>10</sup><sup>10</sup> "A" document defining the general state of the art which is not considered to be of particular relevance<sup>10</sup> "E" earlier document but published on or after the international filing date<sup>10</sup> "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)<sup>10</sup> "O" document referring to an oral disclosure, use, exhibition or other means<sup>10</sup> "P" document published prior to the international filing date but later than the priority date claimed<sup>10</sup> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention<sup>10</sup> "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step<sup>10</sup> "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.<sup>10</sup> "A" document member of the same patent family**IV. CERTIFICATION**

Date of the Actual Completion of the International Search

23 JUNE 1993

Date of Mailing of this International Search Report

09.07.93

International Searching Authority

EUROPEAN PATENT OFFICE

Signature of Authorized Officer

FISCHER J.P.

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
X	WO,A,914 729 (MACKLES ET AL.) 18 April 1991 see example 3 ---	1-5, 13-15
X	FR,E,87 858 (FROMONT) 28 October 1966 * example * & FR,E,78 163 (FROMONT) 1962 -----	1-4, 8-9, 15

FURTHER INFORMATION CONTINUED FROM PCT/ISA/210

INCOMPLETE SEARCH  
CLAIMS SEARCHED COMPLETELY: 1-20  
CLAIM NOT SEARCHED: 21  
PLEASE SEE PCT-RULE 6.2 (a)!



**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO.**

GB 9300573  
SA 72601

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.  
The members are as contained in the European Patent Office EDP file on  
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23/06/93

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB-A-2167429	29-05-86	None	
US-A-3314857		None	
DE-B-1142429		None	
GB-A-2236760	17-04-91	AU-A- 6394590	18-04-91
		CA-A- 2027218	12-04-91
		DE-A- 4032311	18-04-91
		FR-A- 2652740	12-04-91
		JP-A- 3145415	20-06-91
		NL-A- 9002203	01-05-91
WO-A-914729		None	
FR-E-87858		None	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82